

App. Ser. No. 10/806,801
Reply to Office Action of February 1, 2006

REMARKS/ARGUMENTS

REMARKS

Claims 1-17 are pending. Claim 17 has been added. Support for this new claim can be found throughout the specification, thus no new matter has been added thereby.

Rejection under 35 U.S.C. § 102(b)

Claim 1-2, 5, 9-10, and 13:

The Office Action cites:

As to claims 1-2, 5, 9-10, and 13 Covey teaches in figure 2, an apparatus for protecting a composite body aircraft against damage from lightning strikes, the apparatus comprising a Faraday cage defined on an exterior surface of the aircraft body (see col. 1, lines 65-68 & col. 2, lines 1-12). In practice, an electrically conductive mesh is interposed in a stack of layers of composite materials, these layers being intended to form a fuselage panel (figure 2) for example, something that amounts to conferring the properties of a Faraday cage on the fuselage of an aircraft produced in this way. Thus, the interior of the fuselage becomes electrically isolated, the mesh allowing the electric charges to drain away.

Covey fails to disclose the elements of independent Claims 1 and 9.

With regard to Claim 1, Covey fails to disclose using an apparatus for protecting a composite-body aircraft against damage from lightning strikes. The apparatus includes a Faraday cage defined on an exterior surface of the aircraft body.

With regard to Claim 9, Covey fails to disclose a method for protecting a composite-body aircraft against damage from lightning strikes. The method

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includes defining a Faraday cage defined on an exterior surface of the aircraft body.

Covey discloses fastening two composite structures together using a fastener. Each of the two composite structures is comprised of inner regions that provide good electrical conductivity between fasteners and individual fibers within each structure preventing arcing between the fastener and the structures when lightning strikes. A conductive strap can be connected to the fastener and any charge build up or current can be discharged through the strap without arcing. See Col. 3, lines 32-69 and Col. 4, lines 11-18 of Covey.

A Faraday cage is metallic enclosure that prevents the entry or escape of an electromagnetic field. Covey fails to disclose, teach or suggest using a Faraday cage to protect a composite aircraft against damage from lightning strikes. The Office Action cites Col. 1, lines 65-68 and Col. 2, lines 1-12 as disclosing the use of a Faraday cage. Col. 1, lines 65-68 and Col. 2, lines 1-12 of Covey are directed toward a pump that is connected to a composite structure by a metal fastener and significant current which could cause a fire or destruction of a pump. Neither this section, nor any other section of Covey discloses using a Faraday cage.

The Office Action further states:

"[I]n practice, an electrically conductive mesh is interposed in a stack of layers of composite material, these layers being intended to form a fuselage panel . . . something that amounts to conferring the properties of a Faraday cage on the fuselage of an aircraft produced in this way. Thus, the interior of the fuselage becomes electrically isolated, the mesh allowing the electric charges to drain away."

Even assuming arguendo that an electrically conductive mesh is interposed in a stack of layers of composite material, it does not disclose a Faraday cage defined on an exterior surface of the aircraft body as claimed in independent claims 1 and 9. No electric fields are produced in the cage by the incidence of external electric fields on the cage, such as those accompanying a lightning strike on the cage. See paragraph 21 of the specification of the present

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invention. Having the Faraday cage on the exterior surface prevents damage to the entire composite structure from lightning strikes.

Based on the foregoing reasons, Applicants respectfully submit that independent Claims 1 and 9 are patentably distinguished over Covey. Therefore, Applicants respectfully request allowance of independent Claims 1 and 9.

Claims 2-5 and 7 and Claims 10-13 and 15:

Claims 2-5 and 7 and Claims 10-13 and 15 depend from Claims 1 and 9, respectively, and are thus patentably distinguished over Covey for at least the same reasons provided above with respect to Claims 1 and 9. Therefore, Applicants respectfully request allowance of Claims 2-5 and 7 and Claims 10-13 and 15.

Rejection under 35 U.S.C. § 103(a)

Claims 6 and 14:

The Office Action cites:

As to Claims 6 and 14, Covey discloses all the limitations as applied to claim 1, but does not explicitly disclose the protection system comprising a blended wing body aircraft. It would've been obvious to one of ordinary skill in the art at the time the invention was made to modify the device and incorporate the faraday cage protection system with that of the blended wing body so that the panels can be withstand a lightning strike with minimal damage inflicted.

Claims 6 and 14 depend from independent Claims 1 and 9, respectively, and are thus patentably distinguished over Covey for at least the same reasons provided above with respect to Claims 1 and 9. Therefore, Applicants respectfully request allowance of Claims 6 and 14.

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Claims 8 and 16:

The Office Action cites:

As to Claims 8 and 16, Covey discloses all the limitations as applied to claim 1, but does not explicitly disclose the protection system wherein the aircraft includes an electrical system, and wherein the electrically conductive grid comprises a ground return path of the electrical system. Amason does teach the aircraft comprising a ground return path for the electrical system (see col. 14, lines 50-51). It would've been obvious to one of ordinary skill in the art at the time the invention was made to modify the device and add a ground return path to serve as a means of a backup to the aircrafts electrical wiring system.

Claims 8 and 16 depend from independent Claims 1 and 9, respectively, and are thus patentably distinguished over Covey and Amason for at least the same reasons provided above with respect to Claims 1 and 9. Therefore, Applicants respectfully request allowance of Claims 8 and 16.

NEW CLAIM 17

With regard to newly added independent Claim 17, neither Covey reference, the Whelan reference or the Amason reference disclose an apparatus for protecting a composite-body aircraft against damage from lightning strikes. The apparatus includes a continuous, electrically conductive grid formed on the exterior surface of the aircraft. The grid includes a plurality of polygonal composite panels and a plurality of exterior and interior splice plates joining each of the plurality of composite panels.

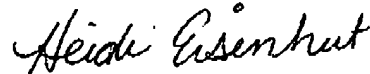
Applicants respectfully submit that newly added independent Claim 17 is patentably distinguished over the Covey, Whelan and Amason references. Therefore, Applicants respectfully request allowance of newly added independent Claim 17.

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CONCLUSION

For the foregoing reasons, Applicants believe Claims 1-17 are allowable, and a notice of allowance is respectfully requested. If the Examiner has any questions regarding the application, the Examiner is invited to call the undersigned at 949-955-1920.

Respectfully submitted,



Date: April 28, 2006

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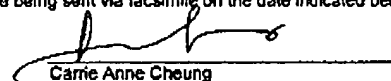
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☒ Pursuant to 37 C.F.R. § 1.6(d), I hereby certify that this paper and all enclosures are being sent via facsimile on the date indicated below to the attention of Examiner Robert Trong Dang

Dated: April 28, 2006

Name of Person Certifying:
Printed Name:


Carrie Anne Cheung